

LETTERS TO THE EDITOR.

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History of a White Rhinoceros Skull.

In his interesting "Natural History Essays," in which occurs the description of the white rhinoceros, Mr. Graham Renshaw makes the following reference to the first skull of this animal which was brought to England:—

"It would be interesting to know if the white rhinoceros head brought to England by the Rev. John Campbell, about 1815, is still in existence. It appears to have been preserved as late as 1867 in the Museum of the London Missionary Society at Finsbury, but there seems to be no mention of it during recent years in zoological literature. In a figure now before me the artist has absurdly furnished the open jaws with an imaginary series of perfectly regular pseudomolar teeth: the square mouth has been distorted to resemble the prehensile lip of the black species, though the slit-like nostrils, position of the eye and semi-tubular ears are delineated with fair correctness. The anterior horn of this individual is said to have been 3 ft. long: and, as figured, from its slender-

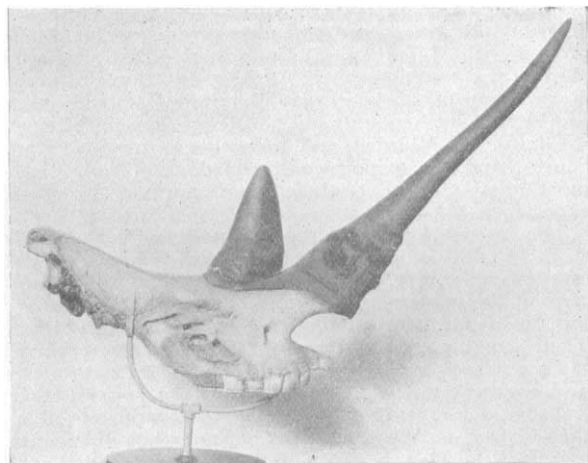


FIG. 1.—Skull of the White Rhinoceros in the American Museum of Natural History.

ness recalls Col. Hamilton Smith's description of the mysterious horn, brought from Africa, from which he sought to deduce the existence of a true unicorn in the interior of that Continent" (p. 146).

In 1902 this very skull was purchased from Mr. Cecil Graham for the American Museum of Natural History by Mr. J. Pierpont Morgan. Mr. Graham has made a large and valuable collection of rhinoceros horn weapons, clubs, knob-kerries, and battle axes, and in course of correspondence he wrote of his discovery of the skull as follows:—"There is no record as to how or when the specimen was first brought to England. I found it by chance a few years ago in the City, lying neglected and dirty on the floor of a back room of the London Missionary Society. No doubt it was presented by a missionary before 1821. I especially value the letter dated 1821."

The letter referred to by Mr. Graham is from William Cooke, of the Royal College of Surgeons. It is dated November 20, 1821, and addressed to William Alers Hankey, Esq., Fenchurch Street. It reads as follows:—

"My dear Sir,
"The head in the missionary museum supposed to be the head of the unicorn, appears to belong to a species of Rhinoceros previously unknown in this country, at least, there is no such specimen in the Hunterian Museum which may be regarded as the National Depository for comparative anatomy. In that grand collection there are

heads which nearly resemble it, but there are points in which the diversity of conformation indicates a decided specific difference.

"Permit me to suggest to you, and through you to the Directors of the Missionary Society, that a rare specimen of that nature is entitled to a place where it can be more justly appreciated than it ever will be in their collection. I need not suggest to you the advantages which result from a concentration of the different productions of nature—from bringing under one view the genera and species of the various natural sciences—especially when they are not only rendered available for minute distinction, but by a liberal policy are accessible to men of science from all parts of the world. I can have no selfish motive in suggesting that the head possessed by the Missionary Society would become much more an object of interest if deposited in the Hunterian Museum, than it ever will be should it remain in the Old Invry. If deposited at the College of Surgeons it will not only fall under the notice of Naturalists from all quarters, but it will likewise be a subject of reference in the lectures on comparative anatomy annually delivered at that Institution.

"The Missionary directors unquestionably will consider the advantages which may result to their own Society, as well as the promulgation of scientific knowledge; and if I might presume to express an opinion on this subject, it would be in favour of the head being presented to the College. It would there be preserved as a testimony of praiseworthy liberality—it would soften prejudice, where perhaps there is a deep-rooted antipathy to religion, but where conciliation is of great importance; and if it remain in its present situation for a few years it will be liable to destruction, or to essential injury at least.

"If you have never seen the Museum of the College of Surgeons it would afford me great pleasure to accompany you thither any Friday.

"I feel assured, my dear Sir, that you will excuse the liberty I have taken in addressing you on this topic;—and believe me to be

"Yours most obediently and

"respectfully

"(signed) WILLIAM COOKE."

In spite of this appeal, the skull evidently remained in the possession of the Missionary Society until Mr. Graham rescued it from oblivion. Although the occipital portion has been sawn off, it is a remarkably fine specimen, as shown by the accompanying photograph. The nasal horn is firmly attached to the skull; the frontal horn is detachable, but readily fits in place. The principal measurements are as follows:—

Total length of skull, along top	778 mm. = 30 $\frac{5}{8}$ inches
Length of grinding series	287 " = 11 $\frac{1}{4}$ "
" frontal horn	280 " = 11 " "
" nasal horn	890 " = 35 " "

(Measured on a straight line.)

The skull is now exhibited with two war clubs manufactured from the nasal frontal horns of the white rhinoceros, with a skull of the related woolly rhinoceros from Siberia, presented by the Moscow Museum, through Madame Pavloff, also with a skull of the *Rhinoceros pachygnathus*, a related or ancestral form, from Pikermi, presented by the Munich Museum through Prof. von Zittel.

HENRY FAIRFIELD OSBORN.

American Museum of Natural History, New York,

April 24.

Fictitious Problems in Mathematics.

YOUR reviewer gives a new definition of "a perfectly rough body" (NATURE, June 1), which he says is that of the mathematician. The definition appears to me to contradict what he has elsewhere said. But I need not enlarge on this point, for his criticism of a problem should be tried, not by his definition, but by that given in the book in which the problem occurs.

The reviewer accuses Cambridge examiners "of endowing bodies with the most inconsistent properties in the matter of perfect roughness and perfect smoothness"

(NATURE, April 27). He adds, as an explanation, that "the average college don" forgets an elementary law of friction. But the proper inference is that the definition of the reviewer is different from that in common use. It is difficult to believe in this general forgetfulness.

The various letters sent to NATURE sufficiently show what meaning is usually attached to the words.

June 3.

E. J. ROUTH.

WHY JAPAN IS VICTORIOUS.

TEN years ago, after the conclusion of the war between Japan and China, it was remarked that the sound of the Japanese cannon at the mouth of the Yalu River awoke the nations of the world to the fact that a new Power had arisen in the Far East which in future would require to be taken into account when any political problems arose. It is, of course, recognised by all who know modern Japan that the most important factor in the making of new Japan has been the applications of science to the arts both of peace and war. Without these, even the spirit of the samurai would have been as powerless before the attacks of Western Powers armed with all the latest warlike appliances, as were the dervishes at the battle of Omdurman. Spectators speak with admiration of the bravery of these men and with pity that their lives were thrown away in a vain resistance. Without the help of science and its applications it is very certain that, before this time, Japan would have been overrun by a European Power after immense slaughter, for the last man would have died, fighting with his primitive weapons, rather than recognise a foreign domination.

A careful study of the evolution of modern Japan shows plans founded on enlightened principles and carried out in every detail. In fact, one of the secrets of the success of the Japanese in the present war is that nothing is left to chance; every detail is worked out and carefully provided for. They soon recognised that their national ideals would never be realised without a system of education, complete in every department, which would supply the men who were required to guide the nation under the new conditions which had emerged. Elementary education was organised all over the country, secondary education in central districts, and technical education wherever it seemed to be required. Above all, there are two national universities which in equipment and quality of work done will bear favourable comparison with similar institutions in any other country in the world.

The educational work of the country was directed not simply to personal or sectional purposes, as is unfortunately too often the case in the West; it was also consciously directed to the attainment of great national ends. Every department of the national life was organised in a rational manner, and, therefore, on scientific principles. In many departments there is still much to be done, but past achievements promise well for the future.

Special attention has been paid by the Government to the applications of science. Without the railways, the telegraphs and telephones, the dock-yards, the shipbuilding yards, the mines, and the engineering establishments, the existence of the army and navy would have been impossible; at least, if they did exist they would have been nearly powerless. The operations of the present war with Russia have clearly demonstrated the importance of the introduction of the scientific spirit into all the national activities. The railways which have been built in Japan have been fully utilised to convey men and materials and the ships to transport them oversea.

The telegraphs have been used to communicate instructions and to keep the authorities informed regarding movements and requirements. The dock-yards and shipbuilding yards have been ready to undertake repairs, and the arsenals and machine shops to turn out war material of all kinds, as well as appliances which aid operations in the field. Light railways have been laid down on the way to battle-fields, and wireless telegraphy and telephones to convey instructions to the soldiers; in short, all the latest applications of mechanical, electrical, and chemical science have been freely and intelligently used.

The Japanese have not only modified Western appliances to suit their conditions, but they have also made numerous distinct advances. The ships of their navy are probably the best illustration of the Japanese method of procedure. In naval matters they accepted all the guidance the Western world could give them, but at the same time they struck out a line of their own, and the fleet which they have created is unique in the character of its units. British designs have in many respects been improved upon, with the result that they have obtained in their latest ships many features which have won the admiration of the world. The training of Japanese naval officers is very complete in every way, and in some respects offers an example to the British authorities, and the men are devoted to their profession. Japan now sends her picked men to Europe to complete their studies, so that in every department of national life they are kept up with the latest developments. The siege of Port Arthur, the battle of Mukden and the other battles in Manchuria, and the exploits of the Japanese Navy prove most distinctly that they have profited by their experience.

The intense loyalty of the Japanese, which compels them to make any sacrifice, combined with their great intellectual ability, enables them to take full advantage of the modern science and organisation necessary for the attainment of the objects of their ambition. Their great power of foresight prepares them for all their enterprises, both of peace and war, with exact and scientific precision. While they are permeated by Eastern ideas they have been able to appropriate much that is best in Western thought, and thus they unite many of the best qualities of the East and the West.

The lesson which our educationists and statesmen have to learn from Japan is that the life of a modern nation requires to be organised on scientific lines in all its departments, and that it must not be directed chiefly to personal ends, the attainment of which may, to a large extent, intensify many of our problems, but that it be consciously used for the promotion of national welfare.

But though the lesson is plain enough, apparently it is not understood by those whose business it is to promote national welfare by guidance or counsel. With one consent our newspapers have attributed Japanese success to all reasons except the right one; and, instead of opening the eyes of the nation to our pressing needs and deficiencies, they have been blind leaders of the blind. Our public men and our Press will not see that scientific education has brought Japan to her present position in thirty years, and that, if we choose to educate ourselves, we may arrive at the Japanese standard of national efficiency. The progress which this country has made since the Middle Ages is due to the discoveries of men of science, whose work has been done in spite of discouragement or national indifference. In the new atmosphere of Japan a scientific spirit prevails, which encourages development, with the result that the nation has in a generation arrived at a position which has taken us centuries to reach. It is not compli-